NUMERICAL ANALYSIS

B.A./B.Sc.-III
SEMESTER-VI

FIRST WORLD PUBLICATIONS
NUMERICAL ANALYSIS

For

B.A./B.Sc.-III (SEMESTER-VI)

By

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TRIGONOMETRY & MATRICES

B.A./B.Sc.-I
SEMESTER-I, P.U.

THOROUGHLY REVISED EDITION
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And
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By

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FIRST WORLD PUBLICATIONS
Scientific Approach in Physical Education and Sports

An Anthology of Selected Paper Presented at the International Seminar

Organized by
P.G.S. Govt. College of Physical Education, Patiala. (Pb)

Editor:
Jaswinder Singh
The responsibility for the facts or opinions expressed in the papers are entirely of the authors. Neither the College nor the publisher are responsible for the same.

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by

Jaswinder Singh

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Roshan Dhindsa & Manpreet Singh

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8. Energy Intake and Energy Expenditure of Elite Indian Male Athletes of Track and Field Events
   - Dr. Harmreet Kaur Anand
9. Effects of 12 Week Plyometric Training Program on Physiological Variables of Handball Players
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    - Bhupinder Singh & Jatinderpal Singh

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Assessment of Selected Coordinative Parameters between Under 19 School Level and College Level Female Basketball Players

Dr. Amarpreet Singh* & Dr. Baljinder Singh*

The purpose of the study to Assessment the selected coordinative parameters between Under 19 school level and college level female basketball players. For this study total 225 female basketball players were chosen as subjects \( (n_1 = 75 \text{ Under 19 school level and } n_2 = 75 \text{ inter college female players}) \). The subjects were systematically acquainted with the testing course of action as well as the purpose implication of the study. On the basis of existing literature in coordinative parameters: Speed, Agility, Orientation Ability and Differentiation Ability these parameters were selected. After the collection of relevant data 't' test was applied with the help of SPSS software. The level of significance was 0.05. Results: The study exposed that the Agility and Orientation Ability parameters shows significant differences between Under 19 school level and college level female Basketball players.

Keywords: Speed, Agility, Orientation Ability and Differentiation Ability.

Introduction

As we all know that with the passage of time the whole thing changes and undergoes transformation. Our present century, the twenty first centuries is the most quickly of changeable century of all time. This rapid change in everything created weird demands on everyone and on our present system of education. Now a day’s education must be like that it should transform one’s over all development for the all-round development of the persons as well as their betterment in their future life. Today education must not only include the body and knowledge but also to build up inquiring minds that will enable them to comprehend and accept whatever come tomorrow.

The developing tendencies in international sports, especially in team games are recognized as the tougher body game, increase in game tempo and greater variability in technique tactics. An better performance level can only be achieved by working and training of all components i.e. technique, tactics, coordination physical fitness, physiological qualities psychological qualities.

The theory of motor coordination is the foundation for bringing together the different abilities. Motor coordination is ingredient of actions regulation. Coordinative abilities have also impron
and strong links with the motor skills as the motor coordination focus the basis of both. These Coordinative abilities enable the sportsperson to do a group or set of movement with better quality and effect. Psychomotor abilities facilitate the sports man to do a group of movements with better quality and effect. The speed of learning of new skill and its stability is directly dependent on the level of various coordinative abilities. They are needed for maximal exploitation of conditional abilities, technical skills and tactical skills (Singh, 1991).

Methodology

For the purpose of the study total 150 female basketball players were chosen as subjects ($n_1=75$ under-19 school female and $n_2=75$ inter college female players basketball players). The subjects were systematically acquainted with the testing course of action as well as the purpose and implication of the study.

Selection of Variables

On the basis of existing literature in Body Parameters the following variables were selected for this study: Speed, Agility, Orientation Ability and Differentiation Ability.

Criterion Measures:

A standard test of 50 yards dash (Johnson, Borrey and Nelson, Jack K.1988) is applied to measure speed.

Shuttle Run 10x10 yards (Johnson, Borrey and Nelson, Jack K.1988) is applied to measure agility.

Backward Medicine Ball Throw Test was used to measure Differentiation Ability.

Numbered Medicine Ball Run Test is applied to measure Orientation Ability.

Statistical Analysis

After the collection of relevant data, it was processed to analyze and t test was applied. In order to check the significance, level of significance was set at 0.05.

Results

Table-1: Comparison of Speed between Under-19 School Level and Inter College Female Basketball Players

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under-19 School level female Basketball Players</td>
<td>75</td>
<td>8.392</td>
<td>0.729</td>
<td>0.470</td>
</tr>
<tr>
<td>Inter College female Basketball Players</td>
<td>75</td>
<td>8.332</td>
<td>0.850</td>
<td></td>
</tr>
</tbody>
</table>

Table 't'-value at $\alpha(148)=1.97$

Table-1 shows that the Mean and Standard Deviation values of Speed with regard to Under-19 School level female Basketball Players is 8.392 and 0.729 whereas in the case of Inter College female Basketball Players is 8.332 and 0.850 respectively. The calculated t-value (0.470) which is less than the tabulated t-value (1.97) at .05 level. So, it shows that there is insignificant
difference between Under-19 School and Inter College female Basketball Players to their Speed Ability.

Table-2: Comparison of Agility between Under-19 School Level and Inter College Female Basketball Players

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under-19 School level female</td>
<td>75</td>
<td>12.323</td>
<td>0.855</td>
<td>11.007</td>
</tr>
<tr>
<td>Basketball Players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter College female Basketball</td>
<td>75</td>
<td>10.885</td>
<td>0.740</td>
<td></td>
</tr>
<tr>
<td>Players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table ‘t’-value at .05(148)=1.97

Table-2 shows that the mean and standard deviation values of Agility with regard to Under-19 School level female Basketball Players is 12.323 and 0.855 whereas in the case of Inter College female Basketball Players is 10.885 and 0.740 respectively. The calculated t-value (11.007) which is greater than the tabulated t-value (1.97) at .05 level. So, it portrays that there is a significant difference between Under-19 School and Inter College female Basketball Players with respect to their Agility.

Table-3: Comparison of Orientation Ability between Under-19 School Level and Inter College Female Basketball Players

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under-19 School level female</td>
<td>75</td>
<td>11.245</td>
<td>1.164</td>
<td>8.825</td>
</tr>
<tr>
<td>Basketball Players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter College female Basketball</td>
<td>75</td>
<td>9.425</td>
<td>1.354</td>
<td></td>
</tr>
<tr>
<td>Players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table ‘t’-value at .05(148)=1.97

Table & figure 3 shows that the mean and standard deviation values of Orientation Ability with regard to Under-19 School level female Basketball Players is 11.245 and 1.164 whereas in the case of Inter College female Basketball Players is 9.425 and 1.354 respectively. The calculated t-value (8.825) which is greater than the tabulated t-value (1.97) at .05 level. So, it shows there is a significant difference between Under-19 School and Inter College female Basketball Players for their Orientation Ability.

Table-4: Comparison of Differentiation Ability between Under-19 School Level and Inter College Female Basketball Players

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under-19 School level female</td>
<td>75</td>
<td>14.45</td>
<td>4.57</td>
<td>1.05</td>
</tr>
<tr>
<td>Basketball Players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter College female Basketball</td>
<td>75</td>
<td>15.20</td>
<td>3.17</td>
<td></td>
</tr>
<tr>
<td>Players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table ‘t’-value at .05(148)=1.97
Table & figure 4 shows that the Mean and Standard Deviation values of Differentiation Ability with regard to Under-19 School level female Basketball Players is 14.45 and 4.57 whereas in the case of Inter College female Basketball Players is 15.20 and 3.17 respectively. The calculated t-value (1.099) which is less than the tabulated t-value (1.97) at .05 level. So, it depicts that there is insignificant difference between Under-19 School and Inter College female Basketball Players for their Differentiation Ability.

Discussion of Findings

**Speed:** The outcomes of the study represent that there were in significance differences between Under-19 School level and Inter College level female Basketball Players with regard to their Speed. **Agility:** The findings of the study display that there were differences between Under-19 School level and Inter College level female Basketball Players with regard to their Agility. It was measure that these three levels of groups were statistically different when compared with each other. Previous study by DIXIT, P. (1982). Strength, power, speed, and agility of women basketball players according to playing position: Results represent that guards performed significantly better than centers for their Agility variable. **Differentiation Ability:** Differentiation ability has a straight bearing on the performance in basketball game. In as much as the game of basketball it have 40 minutes duration of play; the players have to ensure that they take high degree of accuracy and economy of separate body movements and movement phases so that the energy is preserved till the game finishes. The result of the present study shows that there were significant differences between Under-19 School level and Inter College level female basketball players. The results are in consonance with the study undertaken by Farrow (1975) An Investigation of Selected Motor/Physical Performance Variables for a Sample Population of professional Basket Ball Player, sported the present study. **Orientation Ability:** The outcomes of the present investigation display that there exists an insignificant difference between Under-19 School level and Inter College level female basketball players for their orientation ability. The outcomes are supported with the study undertaken by Singh (2014) observed orientation ability was found statistically insignificant between volleyball and basketball players.

References


Prof. Gursewak Singh Govt. College of Physical Education, Patiala (Pb.) NAAC Accredited B is a premier institute of northern India. It is the only govt. college of physical education in Punjab which offers all the courses in physical education. This college started its journey from Mountessary Park Lahore in 1940. To fulfill the requirement of physical education, a six month course was started at Tara Devi. In 1952 the college was shifted to Ropar and finally it was shifted at Patiala in 1958. In the year 2005, college was renamed as Prof. Gursewak Singh Govt. College of Physical Education. Prof. Gursewak Singh was a great sportsperson, eminent educationist and good administrator.
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Effect of Plyometric Training on Reaction Time of Noviced Footballers

Baljinder Singh* & Pawandeep Kaur**

The purpose of the present study was to determine the efficacy of plyometric training on reaction time of noviced footballers. The subjects were 30 male noviced footballers of 18 to 27 years of age group from Punjab sports college. The subjects were randomly selected and were assigned to the one experimental group (Plyometric training). The training was given for a period of 6 weeks. The experimental groups were trained thrice a week. The performances of reaction time of the subjects were taken by the Nelson foot reaction test. The Pre and Post-test were conducted to collect the data. After the collection of data, the t-test was used to identify any significant differences between the before and after training. The level of significance was 0.05.

Keywords: Plyometric Training, Reaction Time Experiment Group, and Footballs players

Introduction

Success in many sports depends heavily upon the athlete’s explosive leg power and muscular strength. In jumping, throwing, track and field events and other activities, the athlete must be able to use strength as quickly and forcefully as possible. This display comes in the form of speed-strength or power (Yessis, & Hatfield 1986). Power represents the amount of work a muscle can produce per unit of time. An increase in power gives the athlete the possibility of improved performance in sports in which the improvement of the speed-strength relationship is sought.

Training is not a recent discovery. In ancient times, people systematically trained for military and Olympic endeavors. Today athletes prepare themselves for a goal through training.

It was not until the 1970’s that plyometric exercises or “jump training began to gain popularity in the games. Up until then, jump training was used primarily in eastern European countries by the top athletes in sports like track and field, weightlifting, and gymnastics. A coach by the name of Veroshanski was among one of the first to publish a series of jumping drills. Originally the word “plyometric” comes from two Greek words, “plio” means “more” and “metric” meaning “to measure”, or more accurately “measurable increase.” The term plyometric was coined in 1975 by one of America’s great track coaches, Fred Wilt.

Plyometric training is a type of exercise designed to increase muscle power. Athletes, basketball players, footballers and sometimes boxers incorporate plyometric training into their

* Assistant Professor, Department of Physical Education, Punjabi University Patiala
** Research Scholar, Department of Physical Education, Punjabi University Patiala
training schedule, with the aim of adding additional explosive power to their game. Athletes gain huge advantage using plyometric training, so long as the exercises are done safely. Movement because of contractions and athletes have noticed that when the muscle is contracting, while being stretched, the contraction is much more powerful. Other things these results show is that athletes running faster, boxers punching harder and basketball players jumping higher. The objectives of the plyometric training program are to shorten the time between muscle stretching and contraction. Plyometric training includes high intensity drills such as jumps, hops and box jumps, which results in explosive bursts of power and speed. To sum the plyometric training the objective is to help basketball players to improve their jumping ability as well as their ability to move explosively.

Procedure and Methodology

The present study was entitled to determine the Effect of plyometric training on reaction time in noviced Footballers. The subjects were 30 male noviced footballers of 18 to 21 years of age from Punjab Sports College. Description of Exercise, Experimental design, administration of the test, Procedure for administration of test, Collection of data, Reliability of data, and statistical procedure employed for the analysis of data are described. Sampling is an important part of research work, especially where the researcher has to collect the data from limited or partly limited population. The present study was an experimental study. For this study 30 male noviced footballers were selected and divided equally single groups.

Plyometric Training Programme

<table>
<thead>
<tr>
<th>UPPER BODY</th>
<th>LOWER BODY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead throw</td>
<td>Jump To Box</td>
</tr>
<tr>
<td>Squat Throw</td>
<td>Depth Jump</td>
</tr>
<tr>
<td>Plyometric-Push-up</td>
<td>Squat Jump</td>
</tr>
<tr>
<td>Overhead Back Toss</td>
<td>Tuck Jump</td>
</tr>
</tbody>
</table>

Table 1: Experimental Group of Reaction Time

<table>
<thead>
<tr>
<th></th>
<th>PRE TEST</th>
<th>POST TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Arithmetic mean</td>
<td>0.2212</td>
<td>0.2156</td>
</tr>
<tr>
<td>95% CI for the mean</td>
<td>0.2094 to 0.2330</td>
<td>0.2045 to 0.2266</td>
</tr>
<tr>
<td>Variance</td>
<td>0.0004525</td>
<td>0.0003985</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.02127</td>
<td>0.01996</td>
</tr>
<tr>
<td>Standard error of the mean</td>
<td>0.005492</td>
<td>0.005154</td>
</tr>
</tbody>
</table>
Effect of Plyometric Training on Reaction Time of Noviced Footballers

### Table 2: Paired samples t-test

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean difference</td>
<td>-0.005653</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.003498</td>
</tr>
<tr>
<td>95% CI</td>
<td>-0.007591 to -0.003716</td>
</tr>
<tr>
<td>Test statistic t</td>
<td>6.259</td>
</tr>
<tr>
<td>Degrees of Freedom (DF)</td>
<td>29</td>
</tr>
<tr>
<td>Two-tailed probability</td>
<td>P &lt; 0.0001</td>
</tr>
</tbody>
</table>

The table 1 and 2 represents the number of students in experiment group to be 15. The means of reaction time of pre-test and post-test scores of experiment group were 0.22 and 0.21 respectively. The calculated 't' value in case of experimental group is 6.259. The calculated t value was more than the table t value at 0.05 level of significance. Cal. T (=6.259) > tab t .05 (29) (= 2.14), Hence it may be concluded that six week Plyometric training programme showed significant improvement in reaction time. Thus the post-test scores of experimental group were significantly higher than the pre-test scores.

### Mean and Standard deviation Plyometric Training on Reaction time of Noviced Footballers

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>S.D.</th>
<th>SEM</th>
<th>'t' Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental (Pre-test)</td>
<td>15</td>
<td>0.2212</td>
<td>0.02127</td>
<td>0.005492</td>
<td>-6.259</td>
</tr>
<tr>
<td>Experimental (Post-test)</td>
<td>15</td>
<td>0.2156</td>
<td>0.01996</td>
<td>0.005154</td>
<td>1.739</td>
</tr>
</tbody>
</table>

**Significant at 0.05 level of confidence. "t" .05 (29) = 2.14**

On the basis of the result it was accomplished that Plyometric training had significant impact in increasing the Reaction time of the experimental group. Therefore the hypothesis was rejected. Since there was significant effect of Plyometric training on reaction time of noviced footballers.

![Histogram showing mean and standard deviation of Plyometric training on reaction time](image)

**Fig. 1:** Mean and standard deviation plyometric training on reaction time of noviced footballers.
Discussion

The study and their implication in training of footballers. In this study, purpose effect of plyometric training on Reaction time of noviced footballers. After the si plyometric training compares the pretest with posttest. The results show that plyometric is more effective. The plyometric training of six week training duration leads to a si effect on the reaction time of noviced footballers. So, in case of reaction time, plyometric was found to effective.

References

The Manipal Education Group, with its heritage of excellence in higher education of 63 years, launched Manipal University Jaipur (MUJ) in 2011 on an invitation from the Government of Rajasthan, as a self-financed State University and has since redefining academic excellence in the region.

MUJ, being a multi-disciplinary University, offers programs at all levels, i.e., Under-Graduate, Post-Graduate and Doctoral, across diverse streams, including Engineering, Architecture, Planning, Fashion & Jewellery Design, Fine Arts, Hospitality, Humanities, Journalism and Mass Communication, Basic Sciences, Law, Commerce, Computer Applications, and Management. More than 6500 students from diverse backgrounds have already been enrolled across all programs. A well-qualified team of faculty members with more than 50% having Ph.D. is the asset of the University.

The University is spread over an area of 122 acres. It is the first LEED India Platinum rated & GRIHA (Five Star) rated Educational Campus in India.

As the first digital campus of the country, MUJ provides online academic information and support to students through an Academic Management System (AMS). The campus is fully Wi-Fi enabled with 10 Gbps optical fibre backbone and has 100% surveillance through 600 CCTV cameras. MUJ boasts of a Solar Power Plant of 850 KW likely to go up to 1.0 MW installed on the roof-tops of the buildings in the Campus.

Manipal University Jaipur, being a new-age University, has not only adopted the best practices from reputed Institutions, but also initiated some innovative ones, in order to keep ahead of the competition and to provide excellence in higher education.

Education at MUJ is fully geared up in terms of its preparedness to impart the right type of skills and knowledge. The University has introduced many innovative concepts in the pedagogical process.

The University facilitates students for short duration stints abroad under more than two dozen MOUs signed with reputed global academic institutes to expose them to the culture and work ethos and prepare them for global leadership.
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ਚੰਡੀਗੜ੍ਹ
घरमीड वैंन घली ही घिरडांड मंडेल्स्ला

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द. घरमीड वैंन
Punjabi Criticism

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प्रमाणी बहुमात्र भे दोहरकिएतारी दे ब्रेक दिंश शंभुम दे उरुस्लेन्टिएस्टिवम ।

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हिंदीकीवर्तम भूमिता

- ठर. गुरुमीत सिंह गुरुसरास

श्रावण घमी पवारम भूमिकी वविता या मधवितिः अत्ते गर्भि-मानस्कम परमांतः उमामिः है। ववितव अत्ते पवार-राट उे ववितव रूपे चर शरद ला भूत्रमस। ‘किंचि पवारयं दे,’ भे अते वविता अते ‘हूसा’ दे ववितवे” ववित-संग्रहसंग्रह विवलं दी तथ्य ववलं रिं अत्ते पवारसर्वसंग्रह संग्रहित हैं उन्हें अत्ते अधिकारी ग्रन्थी भविन्त बात शृङ्गा है। अवस्थिति दी पवार उे भवित मे भवित ग्रन्थी ग्रन्थिः ववित-मानस्कम देवार्थ हू अपने ववितव रिं शरद भवित अत्ते है। ‘हूसा’ दे ववितवे” दी वृद्धमान दृष्टि कर्मयं कर्मकार्यसंग्रह है दृष्ट संग्रह संग्रहित बात शृङ्गा है। ‘पवित्र ववे अत्तैलि’ ववित-राट दी वृद्धमान भाषाः ववित-मानस्कम भवित-ववित चवित अवतिथिः ग्रन्थिः पूर्ण मे शृङ्गा ववित-ववित या मधविताः उमामिः है।

‘पवित्र ववे अत्तैलि’ ववित-राट दी वृद्धमान भाषाः ववित-ववित या मधविताः उमामिः है। अत्र संग्रहां शरद ला भूत्रमस भवित-पवार सविताः ववित-ववित भवित-ववित या मधविताः उमामिः है। अत्र संग्रहां शरद ला भूत्रमस भवित-पवार सविताः ववित-ववित या मधविताः उमामिः है।

*श्री. आकाश जसलाल, गुरुसरास सिंह, गुरुसरास*
Gross National Happiness
A Measure of Quality of Life

Chief Editor: Dr. Sarbjit Kaur Ranu
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59. An Ideological Perspective of Gross National Happiness
   — Dr. Gurmeet Singh Hundal
An Ideological Perspective of Gross National Happiness

Dr. Gurmeet Singh Hundal

The article begins by introducing the concept of Gross National Happiness (GNH) and its need. It then briefly describes the basic methodology involved in evaluation of the GNH index and 8 domains which have been classified by the Center of Bhutan Studies as general contributors to happiness. This is followed by the critical analysis of the idea of Gross National Happiness and the challenges faced in implementing it at the country level as well as in its worldwide implementation. At last, the article presents an alternative to the application of GNH until it is further developed and concludes that the GNH is indeed an admirable idea but which still needs to be further developed in order to further increase accuracy and portability.

Keywords: Gross National Happiness, Measurement

Introduction

"If the government cannot create happiness for its people, there is not purpose for government to exist." - Legal Code of 1729

His Majesty Jigme Singye Wangchuck, the Fourth King of Bhutan introduced the concept of Gross National Happiness in the early 1970s. In the money fueled world, economic development had become of vital importance and the sole measure of a nation’s progress. Wangchuck realized this enhanced materialism, dehumanized the nation and it’s policies and lead to overall unhappiness among the people. Progress merely for the sake of economic development was also damaging the environment. So, Wangchuck decided to factor in the nation’s happiness into the nation’s development measurement. He refused to use GDP as the only measure of a country’s progress. Hence, the concept of Gross National Happiness (GNH) was introduced.

"The GNH is an aggregate measure of a country’s national production, in the vein of the gross national product or gross domestic product. GNH attempts to measure the sum total not only of economic output, buy also of net environmental impacts, the spiritual and cultural growth of citizens, mental & physical health and strength of the corporate & political systems" 1

The basic methodology in determining the GNH involves carrying out various surveys consisting of equally weighted domains and their consequent evaluation. A person is ‘happy’ if he/she achieves ‘sufficiency’ in 70% of the domains. On the other hand, a person is said to be deprived in a domain if he/she hasn’t achieved the required sufficiency in that given domain.

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Need of Quality Education

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by

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ACADEMIA-INDUSTRY INTERACTION IN HIGHER EDUCATION SYSTEM: ITS BENEFITS

Mrs. Vishavpreet Kaur* & Mr. Paramdeep Singh**

Academia-industry collaboration has always been a topic of discussion in both the sides. And still no model exists that is widely used. Indeed, the collaboration, world over, is quite limited. This just shows the difficulty of the problem. In this article, we discuss the different types of collaboration that are possible, particularly in the Indian scenario. In India, currently due to shortage of high quality trained manpower, there is another possible area of collaboration. It is clear that the engineering education system, the way it has evolved, is currently not in best of shape, and will require a lot of help to improve. And it is also clear that, though traditionally the Government was responsible for higher education, relying on the Government alone will not solve the problem fast enough. So, the industry and the established education players will have to pitch in. Some companies and institutes have started some initiatives of their own on this front. But this seems like a very viable area for collaboration, where joint programs have a better chance of success.

Introduction

India has the third largest education system in the world (after US and China) but still we are fighting with many social problems such as employability, students drop-out, learning disabilities, language barriers and cultural difference. According to Confederation of Indian Industries (CII), in the country the Government is doing most of the funding for research and development at the present time, but Industries should also engage themselves in terms of not only funding but also in talent growth, improvement and entrepreneurship.

Education is the right weapon to cut the social slavery and gain social status, economic betterment and political freedom. —Dr. B.R. Ambedkar

View on Higher Education System

In one of the fastest growing economies like India, the Higher Education System is defined as the education which is obtained after completing twelve years of schooling. The education may be of the nature of General, Vocational, Professional or Technical. At the present times, higher education is the mean for creating new knowledge, promoting self-learning and bringing the change in the scholar’s thinking abilities, characteristics and to contribute in the nation development. Higher education plays an important role in the social and economic development through learning, innovations and interaction. In the development environment, higher education

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